REMARKS

These amendments and remarks are in complete and further response to the final Office Action dated June 24, 2007 and the Advisory Action mailed on October 17, 2007. Entry of the foregoing amendments and reconsideration pursuant to and consistent with 37 CFR 1.111, in light of the remarks which follow, are respectfully requested.

By the present amendments, new independent Claim 216 has been worded in order to obviate the prior alleged informalities to previous independent claim 186 and in order to overcome the previous 112 enablement and written description rejections. The word "more" and the numbering of the claim assay steps has been changed as suggested by the Examiner in the Office Action. Claim 216 has been written also such that it does not encompass "functional fragments" of hT2R54 as alleged, and to specify that the hT2R polypeptide (i) or (ii) used in the screening assay specifically binds to compounds bound by the endogenous hT2R of SEQ ID NO:4. Also, the prior dependency objections are moot in view of the cancellation of the prior claims in favor of the present pending claims. Further, in order to expedite prosecution, the claims no longer include prior embodiment (ii) with respect to the recited hT2R polypeptides used in the assays and instead are now limited to screening assays using hT2R polypeptides which are at least 95% identical to the native hT2R54 polypeptide in SEQ ID NO:4.

It is anticipated that the present claims should be free of the previous 112 rejections since similar phraseology in other commonly assigned patent applications relating to taste receptors and assays for using same has been allowed by the United States Patent & Trademark Office based on the view that this language clarifies that the variants used in the assay possess high sequence identity (at least 95%) to the wild-type taste receptor as well as retaining the binding properties of the wild-type or endogenous receptor and therefore are directed to a defined genus of polypeptides that could be identified by routine screening. It is believed that these claims in light to the remarks which follow should place this case in condition for allowance.

Turning now to the final Office Action the Examiner makes objections to claims 186 and 203-206 in the Office Action. These objections should be moot. As noted above, claim 186 has been rewritten as new claim 216 as suggested in the Office Action and the dependency issues relating to prior claims 203-206 is now moot as these claims are cancelled herein. Based on the foregoing withdrawal of the claim objections is respectfully requested.

Claims 186-215 were rejected under the enablement paragraph 35 USC 112 first paragraph. It is believed that these objections should not be applicable to the current pending claims.

The basis of the rejection was the Examiner's allegation that the application does not teach which specific bitter ligands specifically bind and activate the hT2R54 receptor used in the claimed assays. Also, the Examiner asserted that the claims embrace functional fragments and other deletion, addition, and substitution variants of the hT2R54 polypeptide which are not enabled.

This rejections is respectfully traversed. One skilled in the art with the knowledge that hT2R54 encodes a bitter taste receptor as correctly disclosed herein and based on the assays further described would be able to elucidate, absent undue experimentation, what specific bitter ligands specifically bind and interact with this receptor. Indeed this application discloses appropriate assays which have been previously and subsequently used to deorphan similar human taste receptors such as hT2R4 and hT2R8. (See paragraph 41 of this application which describes that hT2R4 and hT2R8 were previously shown to respond to the bitter ligands denatonium and PROP)).

Also it should be noted that this application exemplifies a number of bitter ligands that may be used in the described and claimed assays to deorphan hT2R54 including denatonium at least one of which has been subsequently confirmed to specifically bind and induce the activation of this human bitter taste receptor. (See original claim 45 of this application as well as paragraph 41 which respectively identify denatonium among a small genus of bitter ligands as a potential bitter ligand that specifically binds and activates hT2R54 as well as the teaching in paragraph 41 which indicates that denatonium and

PROP are 2 bitter ligands which have previously been found to specifically bind and activate 2 other human bitter taste receptors, hT2R4 and hT2R8. Therefore the as-filed application contains more than enough information to allow a skilled artisan to practice the claimed invention, i.e., one skilled in the art could and have used the subject assays to identify bitter ligands that interact with the hT2R54 polypeptide.

In addition, it should be noted that in a subsequently filed application by the present Assignee Senomyx, i.e., US Serial No. 11/339,553, filed January 26, 2006, and claiming benefit of priority to a provisional filed on January 26, 2005, Applicants' application contains functional data and claims based on the discovery that hT2R54 specifically responds to the bitter ligands denatonium, acetaminophen and ranitidine. Therefore, it is clear that the hT2R54 used in the claimed assays is a human bitter receptor as correctly disclosed in this application.

As this later-filed application was filed with an oath by the inventors it should not be necessary to file an Affidavit containing this functional data as the application containing the data is believed to readily available for the Examiner's inspection and consideration.

Still further, Applicants have filed a CIP application claiming benefit of priority to the parent of this application which discloses that hT2R54 (and which contains functional data relating to 22 other human bitter taste rectors) and teaches that hT2R54 specifically responds to bitter ligands including denatonium as well as acetaminophen, chloroquine, clarithromycin, epicatechin, labetalol HCl, 1-meth-2-quinoline, oleuropein, omeprazole, oxybutynin chloride, oxyphenonium HBr, pirenzepine di HCl, procainamide, ranitidine, strychnine, trimethoprim and L-tryptophan. While this information is not contained in this application it further substantiates Applicants' position that the skilled artisan can, absent undue experimentation, use the subject hT2R54 receptor in assays to screen for ligands that modulate bitter taste.

The Examiner also indicates that the claims are unduly broad and therefore allegedly non-enabled because the specification does not teach a skilled artisan how to identify hT2R54 variants embraced by the claims which will be functional, i.e., retain the

ligand binding properties of wild-type hT2R54. With respect thereto the Examiner indicates that the specification does not teach what residues are required for ligand binding. This rejection is respectfully traversed.

At the outset it is noted that the claims have been revised to exclude fragments and are limited to assays using hT2R54 polypeptides that possess at least 95% sequence identity to the wild-type hT2R54 polypeptide. Also the claims require that the hT2R54 polypeptide specifically binds to a bitter ligand that specifically binds to the wild-type hT2R54 polypeptide.

Applicants respectfully maintain that a skilled artisan, based on the teachings of this application, could identify bitter ligands that specifically interact with wild-type hT2R54, absent undue experimentation, such as the denatonium bitter ligand disclosed herein and mentioned in original claim 45, and based on this information isolate or construct hT2R54 variants and assay those of which retain the ligand binding properties of authentic hT2R54, e.g. specifically interact with denatonium or another bitter ligand that specifically interacts with authentic hT2R54 polypeptide. This could be effected using standard screening methods and would not rise to the level of undue experimentation especially based on the high level of skill in the art of the ordinary artisan practicing in the field of invention. Indeed Applicants' arguments are supported by the fact that Applicants have used similar methods to deorphan 23 different human bitter taste receptors.

Also, Applicants respectfully note that the facts herein and the claim scope are directly analogous to those on the allowed parent application, US Serial No. 09/825,882 wherein the Board reversed a similar enablement rejection based on Applicant's arguments that the Applicant did enable the claimed genus of bitter receptors (DNAs encoding polypeptides at least 95% identical to wild-type bitter receptor demonstrated later to specifically bind to a bitter ligand disclosed in the application. While Applicants concede that assays are claimed herein, and not the corresponding DNAs, the Board reversed a similarly reasoned enablement rejection on the basis that Applicants' specification as-filed would place a skilled artisan in possession of the recited genus of bitter taste receptors which could be used in the disclosed assays (as later demonstrated by Applicants using

bitter ligands at least one of which was disclosed in the as-filed specification) in order to identify bitter ligands that specifically interact therewith.

Therefore, based on the foregoing, withdrawal of the 112 first paragraph enablement rejection is respectfully requested as it is inconsistent with the Board of Appeals decision in the parent application which was based on a similar set of facts and claims of analogous scope (The claims in the allowed parent application are of the same scope with respect to the genus of T2R polypeptides encoded by the T2R DNA sequences claimed in the parent application, i.e., the DNAs are restricted to those encoding a T2R polypeptide having at least 95% sequence identity to the wild-type T2R receptor disclosed in the application as-filed).

Claims 138-174 and 176 also were rejected under 35 USC 112 first paragraph on the basis that Applicants' specification allegedly does not establish that Applicants were in possession of the claimed invention which is directed to use of a specific human bitter taste receptor for identifying compounds that putatively modulate bitter taste in human subjects. This rejection is respectfully traversed to the extent it may be applicable to the claims currently pending.

Again the position of the Examiner seems to be predicated on the position that the disclosure allegedly does not describe bitter ligands that specifically interact with authentic hT2R54 or teach means for identifying variants of hT2R54 that retain the functional and ligand binding properties of authentic hT2R54.

This rejection is respectfully traversed on the basis that the as-filed application correctly teaches and describes that hT2R54 is a bitter taste receptor which is a member of a family of over 50 taste receptors that specifically responds to bitter ligands including some of which were previously shown to be functional in assays equivalent to those described in this application. In particular, at paragraph 41 this application teaches that hT2R4 and hT2R8 were previously identified human bitter taste receptors in the same family shown to specifically respond to bitter ligands (denatonium and PROP). Also this application correctly teaches that hT2R54 polypeptides may be used in screening assays to identify ligands that modulate the activity of hT2R54. Indeed as taught in later-filed

application US Serial No. 11/339,553 it has been confirmed that hT2R54 is useful in such screening assays and that this receptor specifically responds to the bitter ligands denatonium, ranitidine and acetaminophen. Therefore, Applicants' later-filed application unequivocally establishes that Applicants were in possession of a bitter taste receptor that can be used to screen for compounds that modulate bitter taste in humans. Indeed as mentioned above the subject application even specifically mentions that denatonium is a bitter ligand that may specifically interact with hT2R54 and this has subsequently been confirmed, i.e., that hT2R54 specifically responds to denatonium as well s to other bitter ligands such as acetaminophen and ranitidine.. (See US Serial No. 11/339,553 filed January 26, 2006). Since this information is contained in a US utility application with an executed declaration by the inventors it should not be necessary to submit this information in the form of an Affidavit.

Moreover, for similar reasons as articulated above Applicants respectfully submit that a skilled artisan would be in possession of sufficient information to elucidate what hT2R54 variants embraced by the claims are functional, i.e. respond to a bitter ligand to which the authentic hT2R54 sequence contained in SEQ ID NO:4 specifically responds, such as denatonium or another bitter ligand that interacts with authentic hT2R54. As noted above, and as confirmed by information contained in a recently filed CIP application claiming benefit of priority to the parent of this application, it has been established using assays which are equivalent to those described herein that hT2R54 responds to a variety of bitter ligands including acetaminophen, chloroquine, clarithromycin, denatonium, epicatechin, labetalol HCl, 1-meth-2-quinoline, oleuropein, omeprazole, oxybutynin Cl, oxyphenomium HBr, pirenzepine, procainamide, ranitidine, strychnine, trimethoprim and L-tryptophan.

Therefore, Applicants respectfully submit that the teachings of this application would place a skilled artisan in possession of the invention as set forth in the present pending claims. Also, for similar reasoning as set forth above in the he rebuttal of the 112 enablement rejection the "possession" based 112 rejection should be vacated as it is also unsustainable since it is inconsistent with the reversal of a similar rejection made in the

parent application US Serial No. 09/825,882. This reversal is relevant given that the scope of the genus of T2R variants recited in the present claims directly corresponds to the genus of T2R DNAs claimed in the parent application, now patented. As noted above, the claims being pursued herein are directed to assays that require use of a genus of hT2R polypeptides which this application would place a skilled artisan in possession of, as well as assays using same for exactly the same reasons as argued based on similar rejections made in the now patented parent application. Namely, the as-filed specification correctly teaches that the hT2R54 sequence in SEQ ID NO:4 is a bitter taste receptor, identifies potential bitter ligands therefore including at least one later found to specifically bind this polypeptide , and moreover provides assays for identifying which bitter ligands interact therewith which assays have been demonstrated to be efficacious, i.e.., have shown that several bitter ligands reported herein specifically bind and activate this bitter taste receptor.

Based on the foregoing withdrawal of the 112 first paragraph possession rejection of claims 185-215 is respectfully requested.

It is believed that these remarks and amendments should place this application in condition for allowance. A Notice to that effect is respectfully solicited. This application is being submitted with the requisite fees and no additional fees are believed to be required. However, in the event of variance, the Commissioner is hereby authorized to charge any fees which may be required, or credit any overpayment, to Deposit Account Number 50-0206.

Respectfully submitted,

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